

Mr. S. G. Lackey, voluntary observer at Mesquite, Dallas Co., Tex., reports that a severe hail storm occurred in the vicinity of Lancaster, in that county, at about 8.25 p. m. on the 25th, the path of the storm being about half a mile wide and from five to six miles in length. Hail is reported to have fallen in large quantities, killing chickens, rabbits, etc., and breaking large quantities of window glass.

Chattanooga, Tenn.: a severe thunder-storm, moving from southwest to northeast, began at 3.10 a. m. of the 26th; rain fell in torrents for fifty-six minutes, accompanied by thunder and lightning. The observer could not measure the rainfall at

the time, but thinks that not less than one inch of rain fell during the fifty-six minutes. The storm caused considerable damage in this city.

Lyons, Wayne Co., N. Y.: at about 2 o'clock a. m. on the 27th a thunder-storm, with hard dashes of rain, passed Lyons. Six miles east of this village it became more severe, and a farmer living a short distance south of Clyde was alarmed by an unusual sound. When he first went out the stars were shining, but in a few minutes a dense black cloud passed directly overhead, and from it there proceeded a loud roaring, it being apparently a tornado that did not reach the surface of the earth.

INLAND NAVIGATION.

STAGE OF WATER IN RIVERS AND HARBORS.

In the following table are shown the danger-points at the various stations, the highest and lowest depths for March 1888, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark, March, 1888 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River:						
Shreveport, La.	29.9	18	29.7	2	19.4	20.3
Arkansas River:						
Fort Smith, Ark.	22.0	6	10.4	24	3.5	6.9
Little Rock, Ark.	23.0	28	14.0	24	5.3	8.7
Missouri River:						
Omaha, Nebr.	18.0	24	10.0	18	6.4	3.6
Leavenworth, Kans.	20.0	20	13.8	3	7.8	6.0
Mississippi River:						
Saint Paul, Minn.	14.5					
La Crosse, Wis.	24.0					
Dubuque, Iowa	16.0					
Davenport, Iowa	15.0	23	7.5	19	5.6	1.9
Keokuk, Iowa	14.0	2, 28, 29	10.5	4	6.6	3.9
Saint Louis, Mo.	32.0	26	25.0	3	12.4	13.2
Cairo, Ill.	40.0	31	44.2	13	23.3	20.9
Memphis, Tenn.	34.0	31	31.0	17	18.2	12.8
Vicksburg, Miss.	41.0	31	30.8	1	24.4	6.4
New Orleans, La.	13.0	28	11.4	1	8.5	3.9
Ohio River:						
Pittsburg, Pa.	22.0	30	14.0	10, 11, 16	4.6	9.4
Cincinnati, Ohio	50.0	31	39.5	7	16.6	22.9
Louisville, Ky.	25.0	31	16.0	8	8.1	7.9
Cumberland River:						
Nashville, Tenn.	40.0	30	39.2	23, 24	7.7	31.5
Tennessee River:						
Knoxville, Tenn.		30	13.3	10	2.0	9.3
Chattanooga, Tenn.	33.0	31	27.0	20	4.8	22.2
Monongahela River:						
Pittsburg, Pa.	29.0	30	14.0	10, 11, 16	4.6	9.4
Savannah River:						
Augusta, Ga.	32.0	30	32.7	19	8.3	24.5
Sacramento River:						
Red Bluff, Cal.		5	5.4	1, 28-30	2.4	3.0
Sacramento, Cal.		1	17.5	29, 30, 31	15.4	2.1
Willamette River:						
Portland, Oregon		14	5.2	9, 10	2.5	2.7

* River frozen entire month. † 13 days; river frozen from 1st to 15th, both inclusive.

The Mississippi River passed the danger line at Cairo, Ill., during the closing days of the month, and inundated the lowlands in that vicinity to a considerable extent.

The Savannah River at Augusta reached the danger line on the 30th but fell rapidly on the 31st; no serious damage resulted.

ICE IN RIVERS AND HARBORS.

Passamaquoddy Bay.—Eastport, Me.: floating ice in bay, 11th, 15th, 16th.

Casco Bay.—Portland, Me.: the harbor was full of drift ice on the 13th, causing suspension of navigation; there was also drift ice in harbor on the 14th and 15th; the harbor was free from ice on the 16th.

Connecticut River.—New Haven.: reports from Hartford on the 30th stated that the first boat of the season from Long Island Sound arrived on that date.

Hudson River.—Albany, N. Y.: ice began to break up on 31st.

Wynants Kill River.—Albany, N. Y.: ice broke up and moved out of river on 21st; two dams were carried away, entailing a loss of several thousand dollars.

North and East rivers.—New York City: floating ice in both rivers 5th, 6th, 14th to 18th. East River froze over on 13th.

Alleghany and Monongahela rivers.—Pittsburg, Pa.: floating ice in the Alleghany on 1st, 5th to 7th, 11th to 16th, 18th, 23d, 24th, 25th; in the Monongahela on 5th.

Sandusky Bay.—Sandusky, Ohio: the bay was clear of ice on the 20th; it froze over on the 23d, and was again clear of ice on the 27th.

Lake Erie.—Buffalo, N. Y.: the ice in the lake broke up on the 28th, and drifted down the Niagara River in large fields on the 29th and 30th.

Maumee River.—Toledo, Ohio: the river was clear of ice on the 16th. The steamer "Pathfinder" cleared for Detroit on the 20th, being the first departure of the season.

Grand River.—Lansing, Mich.: ice moved out of river on 19th; river froze again on 22d, and was clear of ice on 26th.

Grand Haven, Mich.: heavy drift ice in river, 16th, 27th. The river opened on the 10th and was entirely free of ice on 31st.

Saint Clair River.—Port Huron Mich.: steamer "Mary" arrived from Algonac, Mich., on the 10th, when navigation between that place and Port Huron was considered open for the season. There was floating ice on the 1st, 4th, 11th, 12th, 29th.

Black River.—Port Huron, Mich.: the ice in the river disappeared on the 29th.

Lake Michigan.—Milwaukee, Wis.: two propellers were fast in the ice near the harbor entrance from early a. m. on the 24th until 6 p. m. on the 26th. The mild weather of the last week of the month, together with the high winds, cleared the lake of ice to a very great extent, so that no ice was in sight at this station on the 31st.

Mississippi River.—Dubuque, Iowa: ice began to move on the afternoon of 31st.

Davenport, Iowa: ice began to move on the 18th and by morning of the 19th the river was free of ice; floating ice was observed on the afternoon of the latter date, and from the 20th to 24th.

Muscatine, Muscatine Co., Iowa: ice moved out of river during the 15th and 16th.

Keokuk, Iowa: the ice dam in the river broke during a. m. of the 2d. The packet "Patience" began making regular trips between Keokuk and Warsaw, Ill., on the 7th. Steamers "Sidney" and "War Eagle" arrived on the 15th from Saint Louis, being the first arrivals from that place this season. Floating ice in river, 9th and 22d.

Little Sioux River.—Smithland, Woodbury Co., Iowa: the ice moved out of the river on the 19th.

Maquoketa River.—Monticello, Jones Co., Iowa: the ice moved out of the river on the 16th.

Cedar River.—Vinton, Benton Co., Iowa: the ice moved out of river on the 18th.

Missouri River.—Fort Sully, Dak.: ice began to disappear rapidly on 14th; river free of ice on the 30th.

Yankton, Dak.: the ice in river began to break up and move out at 9 a. m. on 19th.

Omaha, Nebr.: ice broke during the night and moved down the stream on the 16th.

Leavenworth, Kans.: floating ice in river, 3d, 6th.

Yellowstone River.—Billings, Mont.: ice broke up on 19th; considerable damage resulted from the ice gorges.

Little and Big Horn rivers.—Fort Custer, Mont.: the ice in Little Horn River broke on the 16th, and in the Big Horn on the 19th.

Platte and Laramie rivers.—Fort Laramie, Wyo.: both rivers were free of ice on the 13th.

FLOODS.

Palestine, Tex.: an unusually heavy rain fell on the 3d, causing considerable damage to railroads in this part of state.

Onancock, Accomac Co., Va.: the high tide during the severe storm on the 11th inundated a very large area along Chesapeake Bay, drowning cattle and causing other damage.

Wilmington, N. C.: slight freshet occurred in the Cape Fear River on the 15th.

Fremont, Dodge Co., Nebr., 19th: the freshet in the Platte River has caused great damage in this county. A bridge at this place, and a part of one at North Bend, were washed away, as also several bridges over the smaller streams.

Fort Buford, Dak.: the river rose five feet during the 20th, and overflowed in some places; on the 23d the river fell slightly, but afterwards rose again, flooding portions of the adjacent bottom lands; the Saint Paul, Minneapolis, and Manitoba road-bed was washed to some extent. Reports from the Yellowstone Valley on the 24th stated that ice-dams had formed in the river, causing it to overflow in some places.

Poplar River, Mont.: on the 20th the ice in the Missouri River at Rocky Point and Galpin broke, but at Poplar River it remained intact, causing the water up the river to overflow adjacent bottom lands; the railroad track west of Poplar River was submerged, and houses at the base of the hill were rendered uninhabitable. Reports on the 21st stated that bridges and the railroad bed were washed out to the west of Poplar River. On this date the water reached the highest stage that has occurred since 1881.

Albany, N. Y.: on account of the warm weather and heavy rain which prevailed on the 21st, the snow melted rapidly, and caused rivers and small streams to rise suddenly. At 6 p. m. the docks in this city were submerged, and at 9 a. m. on the following day the river reached its highest stage; after that time it fell slowly. The high water in the Mohawk River and Schoharie Creek delayed all trains on the West Shore and New York Central railroads on this date. The docks were again submerged on the 29th; much damage was done by the high water.

New Haven, Conn., 22d: freshets are reported throughout the state. At Willimantic, Windham Co., a dam broke, causing the mills at that place to shut down. At Hartford the river was sixteen feet above low-water mark, with the ice still firm on the 23d. In other sections of the state the waters began to subside on the latter date.

Norwich, New London Co., Conn., 22d: the recent thaw, together with heavy rains, caused the streams in the surrounding country to overflow, washing away bridges, etc. An area of ten acres in the centre of Norwich was inundated, the water reaching a depth of four feet.

Palmer, Hampden Co., Mass.: the heavy rains which prevailed throughout western Massachusetts on the 21st inundated meadows for miles, and caused much damage to roadways. The lowlands along the Naugatuck and Housatonic rivers in the vicinity of Ansonia were also submerged.

Nashville, Tenn.: the Cumberland River rose very rapidly from the 25th to 30th, and by 11 a. m. of the latter date had

reached a height of 39.2 feet. About fifty families living on lowlands near the river were compelled to move.

Rockwood, Roane Co., Tenn.: the heavy rainfall during the night of the 26–27th flooded a part of this town; the foundations of some buildings were weakened.

Cairo, Ill.: the Mississippi and Ohio rivers rose rapidly from the 27th to the end of the month, reaching their highest stages on the 31st. On the 29th the lowlands both above and below Cairo were inundated. Large quantities of floating debris passed down both rivers on the above dates, interrupting navigation.

Augusta, Ga.: the Savannah River began to rise rapidly on the 27th, and continued to rise until 1.30 p. m. on the 30th, when it reached its highest point, 32.7 feet; it remained at that stage until 9 p. m., when it began to fall; no damage of any consequence resulted.

Rockland, Knox Co., Me., 27th: recent freshets have caused great damage to bridges and mill property in the upper part of this county.

Findlay, Hancock Co., Ohio: Blanchard's Fork of the Auglaize River, which runs through this town, overflowed on the 27th, causing much damage. People living in the lowlands were compelled to move.

Decatur, Morgan Co., Ala.: the Tennessee River below this place overflowed on the 28th. Numerous washouts occurred on the Louisville and Nashville Railroad, between Decatur and Birmingham.

Selma, Dallas Co., Ala.: the Alabama River overflowed at this point on the 28th, causing the people living along the river to move to adjacent highlands.

Anniston, Calhoun Co., Ala., 28th: the heavy rains of the past four days have caused the streams in this section of the state to overflow, washing away many bridges. Travel over the East Tennessee, Virginia & Georgia, the Georgia Pacific, and the Anniston & Atlantic railways was entirely suspended.

Des Moines, Iowa: reports from Sioux City on the 28th stated that on account of the high water at the mouth of the Big Sioux River many persons were compelled to leave their homes.

Lima, Allen Co., Ohio: the Ottawa River, which flows through the centre of this town, overflowed on the 28th, carrying away fences, oil-derricks, pump-houses, etc., along its banks, and damaging about twenty dwellings in the lowlands. The damage is estimated at several thousand dollars. Lost Creek, in the eastern part of Allen county, reached the highest stage known in many years.

Statesville, Iredell Co., N. C.: destructive freshets occurred at this place on the 29th.

Tiffin, Seneca Co., Ohio, 29th: the continuous rains of the past twenty-four hours have caused the Sandusky River and its tributaries to overflow, inundating thousands of acres, including a part of Tiffin. Winter wheat has been greatly injured by the freshet.

The observer at Milledgeville, Baldwin Co., Ga., reports as follows: The month has been very wet and unfavorable to farming interests. The rolling lands of middle Georgia have never before been more damaged in so short a time as was done by the heavy rainfall during the last week of this month. The first three months of the year have afforded but little weather for farm work, which is much delayed.

HIGH TIDES.

Hatteras, N. C., 11th; Pensacola, Fla., 19th; Eastport, Me., 29th.

LOW TIDES.

Baltimore, Md., 12th to 15th; Sebastian, Fla., 26th, 27th.

ATMOSPHERIC ELECTRICITY.

AUROSAS.

The principal auroral displays of the month were those of

the 7th and 15th, both of which were observed quite generally from Montana and Dakota eastward to New England; Egg